

**BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS**

The attached sheet of a drawing includes a change to Fig. 19. Replacement Sheet 13/15, which includes Fig. 19, replaces the original drawing sheet 13/15.

Attachment: Replacement Sheet 13/15.

REMARKS

The Applicant appreciates the Examiner's careful examination of this case. Reconsideration and re-examination are respectfully requested in view of the instant remarks.

With regard to paragraph 2 of the Office Action, the Applicant is obliged to the Examiner for acknowledging the filing of the Preliminary Amendment.

The Applicant is also obliged to the Examiner for acknowledging receipt of the papers submitted under 35 U.S.C. 119(a)-(d).

The drawings were objected to because the reference 26 was used to designate two different parts in Figure 19. A Replacement Sheet for Figure 19 is filed herewith. This Replacement Sheet has been labelled "Replacement Sheet" as requested by the Examiner.

With regard to page 3 of the Office Action, the Abstract has been reduced as requested by the Examiner. The words objected to by the Examiner have been avoided.

Headings have been inserted in the specification as requested by the Examiner at the bottom of page 3 of the Office Action.

With regard to the "claim objections" at the top of page 4 of the Office Action, the Examiner is respectfully asked to reconsider this objection. The Applicant has many patent applications which start with just the words "Variable Turbocharger Apparatus". In the interests of consistency, it is preferred not to insert the word "A". Similarly, in the claims 2 - 7, 10 - 22, 24

– 27 and 29 – 23, it is preferred to retain the original wording of "Variable Turbocharger Apparatus" and not to insert the word "The". It is believed that the claims in their original form are totally clear.

With regard to the objection in the second half of page 4 of the Office Action, claim 1 line 20 and claim 5 line 2 have been amended to remove the phrase "such as".

With regard to the objection of Double Patenting as set out from page 5 line 1 – page 8 line 3 of the Office Action, it is noted that the Examiner says that the Leavesley USA Patent No. 6,928,816 fails to disclose at least one bypass aperture and its performing function. The Applicant agrees with the Examiner.

The Examiner says that the Neil Watson Patent No. GB 2,105,789 discloses at least one bypass aperture 30 which is closed when the size of the gap is at a minimum, and which opens when the gap reaches a predetermined size, the opening of the bypass aperture 30 being such as to allow exhaust gases that are not required for acting on the turbine to bypass the turbine (see Figure 4). The Applicant respectfully disagrees that it would be obvious to combine together the Applicant's previous USA patent with the disclosure of Neil Watson.

The apparatus in the Neil Watson design is such that there is an arcuate segment that is allowed to be withdrawn into an opening formed in a sidewall of the turbine housing. The withdrawal of the arcuate segment into

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the opening opens a gas flow passage through the turbine housing casing, bypassing the turbine.

The Neil Watson design is such that the arcuate segment has to be withdrawn away from the area directly over the turbine in order to open the bypass flow passage within the turbine housing. Thus the Neil Watson design cannot control the turbine speed and control the bypass opening at a predetermined opening, because the arcuate segment has to move out of the gas flow area over the turbine to open the bypass. When the arcuate segment moves out of the gas flow directly over the turbine, the arcuate segment can no longer control the turbine speed. The Leavesley claim 1 in its presently proposed amended form includes an amendment at the end of the claims that emphasise this difference over the Neil Watson design.

Thus the Leavesley design is such that the piston is always in the gas flow, controlling the gas flow onto the turbine even when exhaust gases are being allowed to bypass at a predetermined part of the gas flow.

The Neil Watson design will not allow control of the gas flow over the turbine and control of the bypass at a predetermined part of the flow range. This is because the arcuate segment has to move out of the gas flow area over the turbine to control the bypass system.

The Leavesley design is such that the piston is always in the gas flow controlling the gas flow onto the turbine, even when exhaust gases are being allowed to bypass at a predetermined part of the gas flow.

It will be appreciated from the above that the combination of the cited Leavesley USA Patent No. 6,928,816 and the Neil Watson cited Patent No. GB 2,105,789 will not provide what is now claimed in the above proposed amended claim 1.

At page 8 line 4 – page 10 line 4, the Examiner rejects the Applicant's claims 1, 12 and 30 as being anticipated by Sumser et al USA Patent No. 5,855,117. The Applicant respectfully submits that Sumser et al does not disclose the Applicant's claim 1. More specifically, the Sumser et al design is such that an axially moveable annular slide member (piston) having a guide vane structure is moveably disposed in a turbine housing. The design is such that only the guide vane structure enters into the radial flow passage area over the turbine wheel. The piston does not enter the radial flow passage over the turbine wheel. The design is such that the guide vane structure is moved axially over the turbine wheel in order to control the turbine wheel speed. The piston is used to block and control the bypass passage.

The Sumser et al design is such that only the guide vanes enter into the area over the turbine wheel to control the turbine. The Sumser et al design is such that a first position allows a guide vane structure to be disposed within the radial flow passage. A second position allows the vane structure to be moved out of the radial flow passage to a fully open position. There is a third retracted position spaced away from the radial flow passage in order to allow bypass.

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In contrast, the Leavesley design is such that the piston does not have a moveable vane structure. Also, the Leavesley design is such that the Leavesley piston does not move out of the radial flow passage. The Leavesley design is such that the piston is always maintained in a position so that the piston always controls the area onto the turbine wheel when controlling the bypass at a predetermined gap. This is just not possible with the Sumser et al design.

At page 10 line 5 – page 12 line 12, the Examiner rejects the Leavesley claims 1, 2, 6, 21 – 22, 25 and 30 as being unpatentable over Engels et al German Patent No. DE 199 24 228. The Applicant respectfully submits that Engels et al does not disclose what is in the Applicant's claim 1. More specifically, Engels et al discloses a turbocharger which uses a twin volute turbine housing in which there are no guide vanes. The Leavesley design uses guide vanes which are for accurately directing exhaust gases onto the turbine. The Engels et al turbocharger is such that it uses a displaceable coupler (piston) within one of the twin volutes in the turbine housing. The Engels et al turbocharger design is such that, when a given boost level is achieved, a second volute is allowed to be controlled to pass exhaust gases onto the turbine. The Engels et al design only allows turbine control on one of the volutes and thus only part of the gas flow is controlled. The Engels et al turbocharger is such that the bypass system is only allowed to work when the displaceable coupler in the second volute is moved away from the turbine wheel and past the second volute chamber in the turbine housing in order to

allow bypass. The displaceable coupler cannot control the turbine wheel speed and bypass at the same time. In contrast, the Leavesley design is able to control the turbine speed and bypass at the same time. The Leavesley design is such that the piston is always kept in the gas flow over the turbine so as to control the turbine speed and allow bypass of the exhaust gases at a predetermined gap. This Leavesley design is advantageous in that it is able to prevent a situation where there could be an over-boost situation when not controlling the turbine speed, before controlling bypass.

At page 12 line 13 – page 14 line 5, the Examiner rejects the Applicant's claims 3 – 5, 7, 10, 24 and 26 as being unpatentable over Engels et al in view of Dale et al USA Patent No. 5,441,383.

The Applicant has mentioned above why Engels et al is not relevant. With regard to Dale et al, it is noted that Dale et al does not show a bypass system. Thus, if Engels et al and Dale et al are combined, they still do not achieve what is claimed in the presently proposed Leavesley claim 1.

On page 14 of the Office Action, the Examiner has rejected claim 11 in view of Sumser et al or Engels et al, in view of Design Choice. The Applicant respectfully disagrees with this for the following reasons. The Sumser et al patent does not show or mention a V-shaped bypass system, and the Engels et al patent controls bypass by allowing the gases to bypass the end section of a displaceable coupler (piston) such that gases pass the outer diameter end section not through a V-shaped bypass aperture. Furthermore, the Applicant relies for patentability of claim 11 on the fact that claim 11 includes all of the

features of claim 1, which claim 1 is believed to be allowable for the reasons expressed above.

On pages 14 and 15 of the Office Action, the Examiner has rejected claim 13 as being unpatentable over Sumser et al or Engels et al in view of Design choice. The Applicant respectfully disagrees with this. Sumser et al and Engels et al are not relevant to the proposed new Leavesley claim 1 as discussed above. Furthermore, the Applicant relies for patentability of claim 13 on the fact that claim 13 includes all of the features of claim 1, which claim 1 is believed to be allowable for the reasons expressed above.

At page 15 line 5 – page 16 line 4, the Examiner has rejected claims 27 and 29 over Engels et al in view of either Leavesley Publication No. GB2271814 or Leavesley Publication No. EP 678657. The Applicant Respectfully disagrees with this and notes that two of the documents relied upon the Examiner are the Applicant's own patent specifications. In addition, the Applicant relies for patentability of claims 27 and 29 on the fact that these claims include all of the features of claim 1, which claim 1 is believed to be allowable for the above mentioned reasons.

On page 16, the Examiner has kindly indicated that claims 14 – 20 would be allowable if rewritten in independent form. The Applicant was much obliged to the Examiner for this indication of allowable subject matter. The Applicant would however like broader protection, if at all possible and as discussed above.

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With regard to the section entitled Conclusion on pages 16 and 17 of the Office Action, the Applicant has carefully studied the prior art made of record and not relied upon. This prior art is not believed to affect the allowability of the amended claims submitted herewith, nor the above submissions.

Accordingly, it is respectfully submitted that this application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this **RESPONSE** is found to be **INCOMPLETE**, or if at any time it appears that a **TELEPHONE CONFERENCE** with Counsel would help advance prosecution, please telephone the undersigned or one of his associates, collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,

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Jason D. Shanske  
Reg. No. 43,915

JDS/jmc

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